USSR

UDC   621.371.332.4

MALYSHENKO, Yu. I.

"Computing the Indicatrix for the Dispersion of Millimeter and Submillimeter Radio Wavelengths in Rain"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 81-85 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A315)

Translation: The indicatrices for the dispersion of millimeter and submillimeter radio waves by separate raindrops and by rains of various intensities are calculated. Analysis of the results obtained show that, as opposed to the centimeter wavelength range, the masking action of the rain cannot be lowered by using bistatic radio relay lines in the submillimeter wavelength range. Two illustrations, bibliography of seven. N. S.

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USSR   UDC 632.95

BUROVA, M. S., KUKALENKO, S. S., SAKADYNSKIY, K. I., ROSTOVTSEVA, YE. YE.,
MALYSHEV, A. I.

"Study of the Halogenation of α-Epichlorhydrine"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection --
collection of works), No 1, Moscow, 1970, pp 263-269 (from RZh-Khimiya, No 12,
Jun 72, Abstract No 12N415)

Translation: During chlorination of α-epichlorhydrine (I), β,γ-dichlorohydrine,
α, α', α'-trichloracetone and α, α', α'-trichlorisopropyl alcohol are formed.
During bromination of I, α,γ-chlorobromohydrine is isolated as the primary
product. The process of halogenation of I in the presence of scattered light
and cooling, with heating and ultraviolet or radiation was investigated. A Cl_2
current flows into 207 grams of I at a rate of 0.2-0.4 liters/min at 10-15°;
after 84 hours the HCl and Cl_2 are blown off the solution, and it is fraction-
ated. Then 82.5 grams of Br_2 are added dropwise to 43 grams of I heated to 90-
100°, and kept at 100° for 5 hours and the HBr is blown off and fractionated by
gas chromatography.

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101590j Interaction of alkoxysilanes with Aerosil. Gusein-Zade, A. F.; Nudel'man, Z. N.; Garber, A. M.; Galil-Ogly, F. A.; Rostovtseva, E. E.; Malyshev, A. I. (Nauch.-Issled. Inst. Rezin. Prom., Moscow, USSR). Kauch. Rezina 1970, 29(1), 6-8 (Russ). The reaction of Me₂Si(OMe)₂ (I) with Aerosil (II) was studied by ir spectroscopy at 2600-3000 cm⁻¹. The reaction of I with II involved condensation with SiOH groups of II to give MeOH (as an intermediate by-product), which further condensed with SiOH groups to give SiOMe groups. I inhibited the crosslinking of rubber; however, due to the formation of SiOMe groups on the surface of II, some crosslinking did occur.

CKJR

REEL/FRAME
19801728

Acc. Nr: AP0044190

DIAGNOSTIC SIGNIFICANCE OF INTRADERMAL ALLERGIC TEST IN LISTERIOSIS

Yegorova, A. P., M. Ya. Martynshin, N. Malyshev

A lyzate of agar culture of Listeria was used as an allergen. Intradermal test was made in 278 persons; of this number 18 were suffering from bacteriologically confirmed listeriosis, 116 were pregnant women with suspected listeriosis, 97 healthy persons, and 47 patients with diseases of various (not caused by Listeria) etiology. Besides, serological examination (reaction of agglutination and complement fixation) before and after the intradermal test, was carried out. Analogous investigations were performed on experimental animals.

A conclusion was drawn on the possibility of utilization of an allergic test for diagnostic purpose. The required eegree of sensitization occurred only in half of listeriosis patients. It is considered that allergic reactions in the form of hyperemia and edema of the skin not less than 20 mm in diameter, developing in 24 hours and not disappearing by 48 hours may be of diagnostic significance. The absence of reaction in response to the allergen gives no grounds for excluding listeriosis. Weak reactions may be taken into consideration only in the presence of convincing data of serological examination — high antibody titres or their distinct growth.

REEL/FRAME
19770675

6 DI

USSR

SMIRNOV, B. A., MALYSHEV, B. D., IVOCHKIN, I. I., Candidates of Technical Sciences,
ROSHUPKIN, N. P., SOSEDOV, A. F., Engineers, VNIImontazhspetsstroy, and YEFIMENKO,
L. A., Engineer, Moscow Institute of the Petrochemical and Gas Industry imeni
Academician I. M. Gubkin

"Particulars Associated With the Structure and Mechanical Properties of Joints Made
by Electro-Slag Welding Using Powdered Filler Metal"

Abstract: It is shown that the use of powdered filler metal reduces significantly
the amount of thermal energy expended on joint formation and sharply changes the
thermal and technological characteristics of the electro-slag welding process. The
operating energy is reduced by 1.7 times. The time of the weld zone metal at above
Ac_3 temperatures is reduced by a factor of two and the volume of the metal bath and
its duration time in a molten state is also reduced by a factor greater than two.
Varying the thermal conditions and the nature of crystallization implies improve-
ment of the primary and secondary structure of the seam metal and weld zone. This
raises the impact strength of the metal at low temperatures by a factor of two. In
welding heat hardened steel, the extent of the weakening zone is significantly re-
duced.

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USSR

UDC: 621.791.008.1

MALYSHEV, B. D.

"In the Scientific Council on Problems of Welding"

Avtomaticheskaya Svarka, No 6, June 1971, p 77

Abstract: A session of the section on welded structures of the Scientific Council on the Problem of New Processes of Welding and Welded Structures was held in Kiev on March 2, 1972. The reports heard at the session were dedicated to the development of welded structures and welding technology. Subjects covered included: a design and technological classification developed for welded structures used in machine building. The classification is based on the decimal system and reflects the structural and technological characteristics of welded structures; automation of the manufacture of flat sheet welded structures; investigation of the operation of welded beam structures during installation and use; design of steel welded structures, presenting a new method for calculation of units of standard beams based on preliminary determination of shear forces in the welded seams of complex structures; and prediction of the development of welding production in the Soviet Union through 1990.

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USSR

UDC 621.38:61

LAGUNOVA, I. G., LIKHOVETSKAYA, L. L., VISHNEVSKIY, A. A., ROZENFEL'D, E. B., RAZYGRIN, B. A., VANYUKOV, M. P., and MALYSHEV, B. N.

"Irradiation of Metastases of Melanoma By Pulsed Laser"

V. sb. Ispol'z. optich. kvant. generatorov v sovrem. tekhn. i med. Ch. 2-03 (Use of Lasers in Contemporary Technology and Medicine. Parts 2-3 -- Collection of Works), Leningrad, 1971, p 102 (from RZh Elektronika i yeye Primeneniye, No 2, Feb 72, Abstract No 2A508)

TRanslation: Melanomas are first among primary malignant tumors which metastasiz to the skin. Use of laser emission in such cases is advisable in view of the possibility of simultaneous irradiation of several dozen tumor sites. Type GOS-500 and GOS-1000 pulsed neodymium lasers operating in a free pulse generation modes were used for irradiation. The output energy of the pulse fluctuated from 100 to 500 joules. The total density of the incident energy at the metastatic tumor varied from 1,000 to 5,000 joules/cm^2. Summary.

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USSR   UDC: 621.373:530.145.6

MALYSHEV, B. N., KANAUKH, N. P., PARAMONOVA, N. A., KULIKOVSKIY, B. N.

"Space-Energy Characteristics of a $POCl_3SnCl_4Nd$ Liquid Circulation Laser"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 1,
Moscow, 1971, pp 139-140 (from RZh-Radiotekhnika, No 5, May 71, Abstract No
5D172)

Translation: The space-energy characteristics of a $POCl_3SnCl_4Nd$ liquid pulse
laser of the liquid-circulation type are studied and compared for various
rates of flow of the active liquid through the laser cell: for quiescent,
laminar and turbulent liquid flow. Two illustrations, one table, bibliog-
raphy of one title. Resumé.

Lasers and Masers

USSR
UDC 621.375.82

MALYSHEV, B. N., KANAUKH, N. P., PARAMONOVA, N. A., KULIKOVSKIY, B. N.

"Space-Energy Characteristics of the Liquid Circulation of $POCl_3Sn-Cl_4Nd$ Lasers"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No. 1, Moscow, 1971, pp 139-140 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D1062)

Translation: The space-energy characteristics of a $POCl_3SnCl_4Nd$ circulation liquid pulsed laser were investigated and compared at various flow rates of the active liquid through the laser cell: at rest and for laminar and turbulent flow of the liquid. Authors abstract.

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USSR   UDC 613.644+612.014.45

ANDREYEVA-GALANINA, Ye. Ts., MALYSHEV, E. N., PRONIN, A. P., and
SKORODUMOV, G. Ye., Leningrad Sanitary-Hygiene Medical Institute and
Leningrad Institute of Railroad Transport Engineers"

"The Effect of Subsonics on the Human Organism"

Moscow, Gigiyena i Sanitariya, No 11, 1970, pp 65-69

Abstract: The noise spectrum was recorded for the simultaneous operation
of VP-20V, I-18, and V 10/8 compressors, measured at the work area of one
of the Oktyabrskaya Railway compressor stations, for the frequency range
6.3-3,200 Hz. The overall sound pressure measured by the Leningrad Insti-
tute's new meter at the work area of the shift foreman was 113 db, but the
value measured by the standard III-63 noise meter was only 98 db. The
maximum peak to the left of 50 Hz (12.5 Hz) was 111 db, and that to the
right of 50 Hz was 96 db (125 Hz). Thus, the greatest sound pressure
levels correspond to a frequency of 12.5 Hz. Analysis of the spectrum
showed that the principal sources of compressor noise in the subsonic
range were the stage I and II compressors (peaks at frequencies of 8,
12.5 and 25, and in the audible frequencies -- harmonics of the fundamen-
tal frequencies of 50 and 125 Hz). Compressor station workers questioned
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USSR

ANDREYEVA-GALANINA, Ye. Ts., et al, Gigiyena i Sanitariya, No 11, 1970, pp 65-69

complained of fatigue, headaches, poor sleep habits, and general debility. However, there are no grounds to relate these complaints solely to the subsonic frequency range. The most general physiological effects observed upon exposure of the human organism to subsonics are shifts in respiratory and cardiac rhythms, disturbances of the functioning of the central nervous system, etc.

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USSR   UDC: 621.375.826

MALYSHEV, G. F., TROITSKIY, Yu. V., KHANOV, V. A., and KHYUPPENEN,
V. P.

"Stabilized Single-Frequency Helium-Neon Laser"

Abstract: A description of a frequency-stabilized He-Ne laser, of
0.63 μ wavelength, is given. The stable passive resonator of this
device is inside the laser resonator and is also used for obtain-
ing single-frequency oscillation. A cross-sectional view of the
instrument is provided, and an explanation of its operation given.
Its construction is based on the single-mode industrially manufac-
tured LG-36A, with the discharge tube and the power source unmodi-
fied but with the laser resonator modified by replacing its mirror
with a reflecting interferometer, by being lengthened, by increas-
ing the transmission factor of the spherical mirror, and by improv-
ing thermal insulation of the resonator from the discharge tube.
The automatic frequency tuning system is described and the circuit
of its electronic components given. It is noted that this laser's
frequency can be smoothly varied and can therefore be stabilized
1/2

USSR   UDC: 621.375.826

MALYSHEV, G. F., et al, Avtometriya, No 5, 1972, pp 86-93

according to the spectral line. The authors express their grati-
tude to N. N. Kamenev and Yu. G. Vasilenko.

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USSR   UDC: 533.9.07

GUSEV, V. K., MALYSHEV, G. M., RAZDOBARIN, G. T., SOKOLOVA, L. V.

"Measuring Electron Temperature and Concentration by the Scatter-
ing of Laser Radiation in a Plasma on the Tuman-2 Machine"

Abstract: An experimental method for diagnosing a plasma through
laser radiation scattering is described. The Tuman-2 used by the
authors in the experiments is an axially symmetrical toroidal
magnetic trap with longitudinal current. The toroid has a large
diameter of 80 cm and a small diameter of 20 cm. Maximum diameter
of the plasma cord in the ohmic heating period is 16 cm; the cord
is maintained in equilibrium by a programmed transverse magnetic
field and by the interaction of the longitudinal current and the
housing. The heating of the plasma under the action of the longi-
tudinal current, the uhf field, and the adiabatic compression by
the increasing longitudinal magnetic field, is investigated. Mea-
surements of the electron temperature and concentrations were made
under the conditions in which the plasma was heated by the dis-
charge current. The authors express their gratitude to V. Ye.
Golant, M. G. Kaganskiy, Yu. E. Komach, and Ye. N. Kozlovskiy for
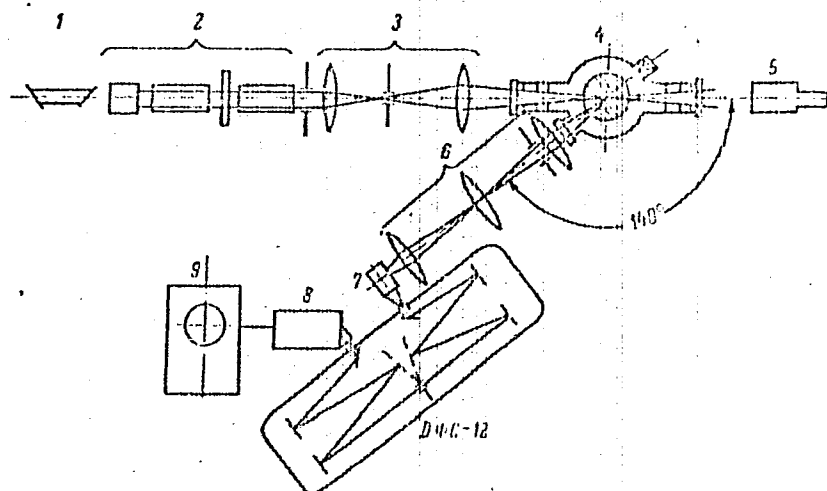their assistance. They are with the Physico-technical Institute
1/2

USSR

GUSEV, V. K. et al, Zhurnal tekhnicheskoy fiziki, No 2, 1972,
pp 340-343

imeni A. F. Ioffe at Leningrad.

USSR

UDC 629.78.018.1

ALEKSEYEV, Yu. N., KOLOSHNITSYN, V. A., MALYSHEV, G. P., NIKOLAYEVA, V. N. and SERGIYEVSKIY, N. A.

"An Experimental Study of the Effect of Surface Cooling on Laminar-Turbulent Transition in the Boundary Layer"

Abstract: The purpose of this study was to investigate the effect of surface cooling on flow regime in the boundary layer, given mainly subsonic flow rate around abody, at which time air compressibility can be ignored. The experiment was conducted with identical models in two different wind tunnels with different degrees of turbulence: for the first tunnel, $\varepsilon = 0.5\%$, for the second, 0.08%. The model was in the form of a hollow aluminum cylinder 100 mm in diameter, the nose cone being in the form of an ellipsoid of rotation with axis ratio $1/b = 9$. The surface of the model was polished; length of the working section was 2.0 m. Distribution of static pressure was marked by absence of a gradient over practically the entire length of the working section. The electrothermoanemometric method was used to determine flow regime in the boundary layer. Wall temperature was measured with use of calked
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USSR

ALEKSEYEV, Yu. N., et al., Teplo- i Massoperenos (Heat and Mass Transfer), Vol 1, 1972, pp 171-175; (Referativnyy Zhurnal, Series 41, No 6, 1972, Abstract No 6.41.181)

chromel-copel thermocouples. During the experiment the transition position was determined twice: in the first instance, for $T_W = T_\infty$, while in the second, the cavity of the model was filled with melting ice. Experimental procedures and results are given in tabular form. It is concluded that 1) surface cooling leads to stabilization of flow in the boundary layer of an incompressible gas, and 2) with increase in thermal head the thermal Reynolds number rises. Biblio. 4, illus. 3, tables 1.

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USSR   UDC: 621.396.69:621.319.4(088.8)

MALYSHEV, G. T., LOPUKHIN, V. A.

"A Device for Automatically Checking Capacitance During Winding of Ca-
pacitors"

USSR Author's Certificate No 267757, filed 1 Jul 68, published 9 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V292 P)

Translation: This Author's Certificate introduces a device which contains
measurement contacts, a bridge, a reference voltage source, a phase-shifting
RC network, a cut-off module and a rejection module. As a distinguishing
feature of the patent, a fixed section of metallized film is used as the
resistance in the phase-shifting RC network which is connected in the
reference voltage circuit of the phase-sensitive detector, and two phase-
-sensitive detectors are connected to the phase-shifting RC network.

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USSR   .   .   UDC 517.933

BARAHOVSKIY, V. P., MALYSHEV, G. V.

"A Problem of the Identification of a Periodic Input Signal of a Stationary
Linear System"

Translation: It is proposed that a periodic input action on a stationary
linear system and a steady-state output signal are symmetric in terms of
semiperiodic oscillations. In one part of the half-period the input action
is known but the output signal is unknown; in the other part of the half-period
the output signal is known but the input action is unknown. A procedure is
described for determining the unknown parts of the input and output oscilla-
tions. The solution of the problem reduces to the solution of a system of
integral Volterra equations of the second type. Authors abstract.

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USSR

UDC: 621.384.639

ABROSIMOV, N. K., ALKHAZOV, D. G., DMITRIYEV, S. P., YELISEYEV, V. A.,
KAMINKER, D. M., KULIKOV, A. V., MIRONOV, Yu. T., MIKHEYEV, G. F.,
RYABOV, G. A., CHERNOV, N. N., SHALMANOV, V. I., KOMAR, Ye. G., MALY-
SHEV, I. F., MONOSZON, I. A., PEREGUD, V. I., ROZHDESTVENSKIY, B. V.,
ROYFE, I. M., SEREDENKO, Ye. V., Physicotechnical Institute imeni A. F.
Ioffe, Academy of Sciences of the USSR, Leningrad, Scientific Research
Institute of Electrophysical Equipment imeni D. V. Yefremov, Leningrad

"The Leningrad Synchrocyclotron for a Proton Energy of 1 GeV"

Abstract: The paper describes the synchrocyclotron at the Physicotechnical
Institute imeni A. F. Ioffe of the Academy of Sciences of the USSR for a
proton energy of 1 GeV. Proton beam parameters as well as the characteristics
of the main systems of the accelerator are presented. The beam channels are
described, and the layout of the accelerator building is given. The installa-
tion has been in successful operation since 1970. Three tables, two figures,
bibliography of twelve titles.

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› USSR

ADO, YU. M., ZHURAVLEV, A. A., LOGUNOV, A. A., MYAE, E. A., NAUMOV,
A. A., PISAREVSKIY, V. YE., ROGOZINSKIY, V. G., TUSHABRAMISHVILI, K.
Z., SHUKEYLO, I. A., BOYKO, S. N., KOMAR, YE. G., MALYSHEV, I. F.,
MOZIN, I. V., MONOSZON, N. A., MOZALEVSKIY, I. A., SPEVAKOVA, F. M.,
STOLOV, A. M., TITOV, V. A., VOROP'YANOV, F. A., KUZ'MIN, A. A., KUZ'-
MIN, V. F., MINTS, A. L., RUBCHINSKIY, S. M., UVAROV, V. A., GUTNER,
B. M., ZALMANZON, V. B., PROKOP'YEV, A. I., and TEMKIN, A. S.

"Some Results of the Overall Adjustment and Start-up of the 70-Gev
Proton Synchrotron of the Institute of High-energy Physics"

Abstract: The physical part of the plan for the 70-Gev proton syn-
chrotron was executed by the Institute of Theoretical and Experimental
Physics. The electromagnet with feed system, the vacuum chamber, and
the injection devices were developed at the Scientific Research Insti-
tute of Electrophysical Apparatus imeni D. V. Yefremov. The radio-
electronic systems for acceleration process control and generation of

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·USSR·

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

the accelerating field, as well as the radiotechnical measurement and beam observation systems, were developed by the Radiotechnical Institute of the Academy of Sciences USSR. "Tyazhpromelektroproyekt" [State Planning Institute for the Planning of Electrical Equipment for Heavy Industry] designed the general-purpose electrotechnical devices and cable connections. The plan for the construction complex of the accelerator was developed by the State All-Union Planning Institute. The construction of the accelerator was under the general supervision of the State Committee for the Use of Atomic Energy USSR. The adjustment of individual systems and the overall adjustment and start-up of the accelerator were carried out by the Institute of High-energy Physics and the developers of the accelerator systems. The basic beam work was done by the Institute of High-energy Physics with the participation of the Radiotechnical Institute. The construction of the accelerator was begun in 1960, and all the basic construction and assembly work was completed at the beginning of

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ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

1967. At the initial stage of construction, before the formation of the Institute of High-energy Physics in 1963, the work was coordinated by the Institute of Theoretical and Experimental Physics. The linear accelerator injector was started on 28 July 1967, the operation of the individual systems was adjusted by September 1967, and the physical start-up of the accelerator was accomplished on 14 October.

A description is given of the work done to adjust the annular electromagnet (including the electromagnet cooling and feed systems), the injection system (consisting of matching channel and injection device), the vacuum system, the radioelectronic system (including the accelerating field generation system, the acceleration process control system, and the radiotechnical measurement system), and the beam observation system (which provides for beam observation in the first revolution and during acceleration). In the physical start-up of the accelerator the main efforts were directed towards obtaining accelerated protons of the planned energy, and the problem of obtaining high

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ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

intensity of the accelerated proton was not raised.

The article gives a listing of the principal parameters of the proton synchrotron, as well as a schedule of the individual stages of the start-up of the accelerator. Photographs include a view of the part of the ring hall in the beam injection area and a general view of the hall of ignitron rectifiers.

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USSR   UDC 621.039.623

ALEKSIN, V. F., BIRYUKOV, O. V., GEORGIYEVSKIY, A. V., KITAYEVSKIY,
L. KH., KOMAR, YE. G., LOGINOV, A. S., MALYSHEV, F., MONOSZON, N.
A., POPKOVICH, A. V., ROZHDESTVENSKIY, V., SAKSAGANSKIY, G. L.,
SINEL'NIKOV, the late K. D., SOKOLOV, YU. A., SUPRUNENKO, V. A.,
TOLOK, V. T., CHURAKOV, G. F., and SHABEL'NIKOV, I. A.

"The Experimental Thermonuclear Device 'Uragan'"

Moscow, Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

Abstract: An urgent task of stellarator research is a definitive
elucidation of the reasons for anomalous diffusion in a stellarator,
as well as the effect of the shear and magnetic well on the confine-
ment of a hot and dense plasma. These questions will be studied on
the "Uragan" stellarator. Construction of the "Uragan" stellarator
was begun at the suggestion of I. V. KURCHATOV and completed in 1967.
The physical substantiation and technical assignment of developing
and constructing the complex were developed at the Physicotechnical

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USSR

Institute of the Academy of Sciences Ukrainian SSR under the direction of K. D. SINEL'NIKOV, who took an active part in the solution of theoretical and technical questions. Organizations taking part in the development of the project and the construction of the complex included the Scientific Research Institute of Electrophysical Equipment imeni D. V. Yefremov, the Elektrosila Electrical Engineering Combine, the Khar'kov Polytechnic Institute imeni V. I. Lenin, the Electromechanical Plant and NIIElektroapparat [Scientific Research Institute of Electrical Equipment] in Khar'kov. A considerable amount of work on the development, manufacture, and adjustment of the systems and components of the "Uragan" was done at the Physicotechnical Institute of the Academy of Sciences Ukrainian SSR.

The principal feature of the "Uragan" is high shear (of the order of 0.02 and 0.1) at a high level of magnetic field strength

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H_0 (35 and 10 koe respectively). The stellarator is in the shape of a racetrack and uses a high-shear triplex helical field. The vacuum chamber of the trap consists of two semi-tori with an average radius R = 1100 mm and two rectilinear sectors, each 1725 mm long. The internal diameter of the chamber is 200 mm. On the outside of the chamber on the toroidal sectors are two helical windings and longitudinal magnetic field coils, distributed evenly along the device. The maximum strength of the magnetic field is 10 koe under steady-state conditions and 35 koe under pulsed conditions. Three windings are used; viz., longitudinal magnetic field, helical, and transverse magnetic field. All metallic elements are made of low-magnet steel 1Khl8N9T. The toroidal sectors of the vacuum chamber and part of the rectilinear sectors are made of stainless nonmagnetic alloy EP-125. The article gives a detailed description of the windings, cooling system, electric power supply system, vacuum system, and plasma diagnostic and heating system.

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USSR

UDC 517.946

KORSUNSKIY, L. M., MALYSHEV, L. G.

"An Integral Representation of the Solutions of the Cauchy Problem for a Parabolic Equation With Variable Coefficients"

Kiev, Matematicheskaya Fizika, No 10, 1971, pp 143-148

Abstract: Integral representations are obtained for solutions of the Cauchy problem for a parabolic equation with a variable coefficient in an infinite layer in the cases of a plane and a space. A theorem is proved for a layer in the plane. Since the proof is analogous in the spatial case, only the final result is given. The representations can be used in the qualitative study in the numerical solution of certain specific Cauchy problems.

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MALYSHEV, I.V.

Microelectronics A

MICROELECTRONICS

CONTENTS

[I - USSR - F]

The article analyzes the elimination of voltage ...
nation, the coefficient of suppression of voltage ...
nous component), the working mode, and the initial ...
disbalance of differential amplifying cascades, done ...
on KDP transistors.

The expressions obtained may be used for computation and
planning of such cascades both in the discrete and in the inte-
grated variations.

The article contains 1 figure and 2 bibliographic ref-
erences.

UDC 621.382.32

Equivalent Circuits of an Integrated Transistor for Practical
Computations of the Frequency Characteristics of Semiconductor
Integrated Circuits. Golubev, A. P., and Malakhov, I. V., in the
Collection Mikroelektronika, edited by F. V. Lukin, No 5, p 201,
Sovetskoye Radio Publishing House, 1972.

On the basis of the previously suggested undetermined
matrix of the conductivities of an integrated transistor the
authors show the limited applicability of the ordinary rec-
tangular equivalent circuit. A method is given for determin-
ing the components of a complex rectangular equivalent cir-
cuit of an integrated transistor through the coefficients of
its matrix of conductivities. The experimental and computed
frequency characteristics are cited for amplifiers in which
the transistors are connected according to the following
circuits: common collector - common base and common emitter -
common base.

The article contains 3 figures, 2 tables, and 4 bib-
liographic references.

UDC 621.382.8

Difference Control Element for Sequential Integrated TTL
Structures. Aleksenko, A.G., Kondrashov, V.K., Rotnov, 5. 2.,
and Shapurin, I. I., in the Collection Mikroelektronika,
edited by F.V. Lukin, No 5, p 211, Sovetskoye Radio Publish-
ing House, 1972.

The article cites the structural circuits of typical
sequential circuits (triggers, counters, registers), the
control of which is accomplished on the basis of a differ-
ence element shaping the impulse by switching of the cyclic
signal and satisfaction of certain logic conditions on func-
tional inputs. A variation is suggested for a difference
control element, made on the basis of a transistor-transistor

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USSR   UDC 669.15.24.295:621.785.78

ZEMTSOVA, N. D., and MALYSHEV, K. A., Institute of Metal Physics, Academy of Sciences USSR

"Continuous Decomposition of γ-Solid Solutions in Iron-Nickel-Titanium Alloys"

Abstract: Rods 15 x 15 mm in size were prepared from N25KhT2 (C 0.03, Si 0.37, Mn 0.34, Cr 1.07, Ni 25.0, Ti 2.20, Al 0.23 weight percent) and N27T2 (C 0.04, Si 0.45, Mn 0.32, Cr 0.09, Ni 27.0, Ti 2.49, Al 0.06) alloys and homogenized at 1200°C. The resulting austenite consisted of approximately identical grains 1 mm in diameter. All samples were subjected to aging at 500-850°C for 1-50 hours. The microstructure of samples was studied by optical and electron microscopes. In the course of aging the γ-solid solution underwent decomposition, with the formation of clusters of the γ' phase and the appearance of cubic particles of the stable Ni_3Ti phase along slip planes produced by the heat treatment of samples. Aging at 800°C of annealed alloys could lead to a direct growth of the hexagonal tightly packed Ni_3Ti phase along the grain boundaries, subboundaries, and dislocations. The spherical particles

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ZEMTSOVA, N. D. and MALYSHEV, K. A., Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 1006-1014

of γ' phase which appeared in matrix during aging were transformed into lamellas of the Ni_3Ti phase with the Widmanstatten structure at the later stages of aging. A presence of chromium in these alloys accelerated this process because Cr decreases the critical size of nuclei on which the stable phase is formed.

2/2

Mechanical Properties

TEPLOV, V. A., MALYSHEV, K. A., PAVLOV, V. A.

"Damping in Copper-Aluminum-Nickel Alloys and Its Causes"

Abstract: The damping properties of Cu-Al-Ni alloys containing 9.18 to 14.45 wt.% Al and from 0.95 to 6.5 wt.% Ni were determined on a pendulum test machine. The alloys have high specific damping capacity -- from 15 to 75%. Damping is explained by losses in the energy of mechanical oscillations as the boundaries of twin-like bands and interphase boundaries move. In certain cases, these materials can be used as structural damping materials. Alloys containing from 9 to 13.2% Al and about 2.4% Ni have good damping and acceptable mechanical properties.

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USSR   UDC 669.24'26:620.181

MALYSHEV, K. A., and ZEMTSOVA, N. D., Institute of Metal Physics, Academy of
Sciences USSR

"Kinetics of Martensite Transformation and Martensite Morphology in Alloy
N25KhT2 After Aging"

Abstract: The effect of prior aging on the kinetics of martensite transforma-
tions and martensite morphology in Fe-Ni-Ti alloys was investigated. The
study was made on the N25KhT2 metastable austenitic alloy (0.03% C, 0.37%Si,
0.34% Mn, 1.07% Cr, 25.0% Ni, 2.2% Ti and 0.23%Al). Forged ingots were double
quenched from 1000°C with intermediate cooling in liquid nitrogen to obtain
a uniform recrystallized austenite grain. The effect of aging conditions on
the kinetics of martensite transformation in the N25KhT2 alloy can be explained
by the change of mutual positioning of the temperature intervals of isothermal
and athermal transformations. In a hardened unaged alloy the interval of iso-
thermal transformation lies between -170 and -110°C, and the M_s point of
athermal transformation lies at -140°C. In the processing of soaking at
temperatures above -140° C, only the isothermal transformation takes place;
below -140°C a mixed transformation occurs, whereupon the athermal transforma-
tion starts sooner than the isothermal one. Aging at 500-550°C stabilizes the
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MALYSHEV, K. A. and ZEMTSOVA, N. D., Metallovedeniye, No 9, Sep 72, pp 38-43

austenite and prevents the isothermal martensite transformation. Thus in the N25KhT2 alloy the kinetics of martensite transformation and morphology of martensite may differ and depend on the stabilization or destabilization of austenite during aging. 10 figures, 8 bibliographic references.

2/2

USSR   UDC 669.1:539.292

BUTAKOVA, E. D., EYSMONDT, T. D., and MALYSHEV, K. A., Institute
of Physics of Metals, Academy of Sciences USSR

"Influence of Chromium and Nickel on Martensite Conversion
During Deformation and the Mechanical Properties of Fe-Ni-Cr
Alloys"

Abstract: In Fe-Ni and Fe-Ni-Cr alloys, a decrease in the content of nickel and
an increase in the content of chromium cause activation of the martensitic con-
version during deformation. It is assumed that activation of the conversion is
related to packing defects which develop during deformation and serve as seeds of
the martensite.

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USSR

UDC 669.1:669.017.3

BUTAKOVA, E. D., and MALYSHEV, K. A., Institute of Metal Physics, UNTs
Academy of Sciences USSR

"Martensite Transformation Kinetics and Morphology in Fe-Ni and Fe-Ni-Cr
Alloys"

Abstract: Fe-Ni and Fe-Ni-Cr alloys were investigated to determine the effect
of nickel and chromium on the kinetics of martensite transformation and
martensite morphology for continuous cooling under isothermal conditions.
It was found that an decrease in Ni content and an increase in chromium
content causes a transformation from the athermal kinetics of martensite
conversion to isothermal kinetics which are accompanied by a change in the
martensite morphology. A correlation was noted between the change in
stacking fault energy and changes in the kinetics of martensite transformation
and morphology of the martensite.
In alloys such as Fe-10Ni-15Cr and Fe-8Ni-18Cr, having a gamma-epsilon-
alpha transformation, the finely crystalline alpha-martensite is situated
within the crystal of the . epsilon-phase, inheriting the Widmanstatten
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orientation despite the absence of the gamma-epsilon-alpha transformation in
them. It is suggested that these features can be explained by the gamma-
stacking fault-alpha transformation in these alloys. The authors thank P. A.
MALINEN and L. A. MEL'NIKOV for assistance in conducting the tests and V. D.
SADOVSKIY for his attention and counsel in completing this work. Five
figures, one table, 12 bibliographic references.

2/2

USSR   UDC 539.67

TEPLOV, V. A., MALYSHEV, K. A., and PAVLOV, V. A.

"Measurement of the Amplitude Dependence of Internal Friction in an Alloy With a Thermoelastic Martensite"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 156-159

Abstract: Results are presented of measurements of the internal friction in Cu-14.5%, Al-3.4%, Ni and Ti-54.5% in the range of $1-20 \times 10^{-4}$ amplitudes. It is shown, that high internal friction in alloys is governed by motion of the interphase boundary under a variable load and by variation of a thin, twinning martensite structure.
    The variation of slope of the internal friction amplitude dependence characteristic is explained by a saturation of inelastic processes, generating high friction. 3 figures, 13 references.

1/1

"Influence of Chromium and Nickel on Martensite Conversion During Deformation and the Mechanical Properties of Fe-Ni-Cr Alloys"

Abstract: In Fe-Ni and Fe-Ni-Cr alloys, a decrease in the content of nickel and an increase in the content of chromium cause activation of the martensitic conversion during deformation. It is assumed that activation of the conversion is related to packing defects which develop during deformation and serve as seeds of the martensite.

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UDC 669.112.227.1

MALYSHEV, K. A., and BUTAKOVA, E. D., Institute of Metal Physics, Academy of Sciences USSR

"Magnetometric Study of Stabilization of Austenite in Alloys"

Abstract: The phase hardening occurring in Fe-Ni-Cr with high M_n point arising as a result of the martensite conversion $\gamma \to \alpha \to \gamma$ and plastic deformation stabilize austenite.   In this case, the athermic martensite conversion is replaced by an isothermic conversion.   It is assumed that the change in the nature of the martensite conversion results from the presence of chromium.

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USSR   UDC: 669.14:539.4.

SAGARADZE, V. V., MALYSHEV, K. A., Institute of Physics of Metals, UNTs, Academy of Sciences of the USSR

"Influence of Alloying Elements on the Nature of α → γ Transformation and Degree of Austenite Phase Hardening in Chrome-Nickel Stainless Steels"

Abstract: The authors investigate the effect which alloying with W, Mo, Nb, V, Ti, Co, Mn and Cu has on the nature of the α → γ phase transformation and on austenite hardenability in chrome-nickel stainless steels due to direct and reverse martensite transformation.   It is found that the reverse α → γ transformation has the principal features of martensite transformation — taking place by a crystallographically ordered path accompanied by a change in the shape of the transformed sections, which leads to an anomalous change in the length of grain-oriented specimens in the process of austenite formation.   Alloying with W, Mo, Nb, V and Ti, in contrast to Co, Mn and Cu, delays the development of diffusion processes of randomizing in the presence of heat, which appreciably increases the effectiveness of phase hardening of

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SAGARADZE, V. V., MALYSHEV, K. A., Fizika Metallov i Metallovedeniye, Vol 33, No 3, Mar 72, pp 607-613

austenite due to $\gamma \to \alpha \to \gamma$ transformation. Austenite phase hardening in Cr-Ni stainless steels alloyed with 2-3% Mo, 3% W, 1.5% Ti, 2.5% V or 1-2% Nb increases the yield stress measured at 350°C from 13 to 40-60 kg/mm^2 at high values of relative longitudinal extension.

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USSR

UDC: 629.7.018:621.365.42

ISKRA, A. L., MALYSHEV, L. A., POPOV, V. Ye., SOBOLEV, A. A.

"A High-Temperature Ohmic Gas Heater"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 73, Author's Certificate No 369449, Division G, H, filed 7 Apr 71, published 8 Feb 73, p 121

Translation: This Author's Certificate introduces a high-temperature gas heater, e. g. for a hypersonic wind tunnel. The device contains a housing with a gas feed system, heating elements of a porous current-conducting material, and a prechamber. The heating elements are made in the form of hollow split coaxial cylinders which form a labyrinth cavity between them. As a distinguishing feature of the patent, the range of operating conditions in the wind tunnel is extended by placing an interchangeable ceramic inset between the labyrinth cavity and prechamber of the heater. The inset has holes through it, and can be changed to vary the route of flow of the gas through the porous heating elements.

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ISKRA, A. L. et al., USSR Author's Certificate No 369449
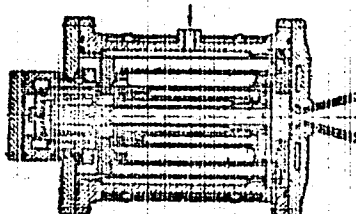
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USSR   UDC 621.396.67.001.24

DYMSKIY, V. N., MIZGAYLOV, V. N., MALYSHEV, L. A.

"A Method of Practical Synthesis of Antenna Systems"

Tr. Kazan. aviats. in-ta (Works of the Kazan' Aviation Institute), 1971, vyp.
137, pp 27-38 (from RZh-Radiotekhnika, No 6, Jun 72, Abstract No 6B1)

Translation: A procedure for the formation of the radiation pattern of an
antenna system by utilizing experimentally recorded radiation patterns of
individual sources is discussed. The problem of synthesizing an antenna sys-
tem comprising discrete radiators located near a metallic body of complex geo-
metric configuration is stated and solved. The radiation pattern implemented
is represented in the form of a generalized Fourier series with respect to
natural harmonics. Estimates are made of the accuracy of the solution of the
problem of practical antenna synthesis. The theoretical principles are illus-
trated by a specific example of synthesis of an antenna system with respect to
a given radiation pattern comprising three radiators of the magnetic type lo-
cated on the conical junction between two cylinders of different diameters.
The statistical calculation results are presented. There are 3 illustrations,
1 table and a 6-entry bibliography.

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1/2   040   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--EXPERIMENTAL STUDY OF THE PROPAGATION OF LONGITUDINAL STRESS. WAVES
   IN BARS OF POLYMERIC, OPTICALLY ACTIVE PLASTICS -U-

AUTHOR--MALYSHEV, L.K.

COUNTRY OF INFO--USSR

SOURCE--MEKHANIKA POLIMEROV, VOL. 6, JAN.-FEB. 1970, P. 68-75

DATE PUBLISHED------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--LONGITUDINAL WAVE, MECHANICAL STRESS, OPTIC ACTIVITY,
   PHOTOELASTICITY, PLASTIC, POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1592/1894   STEP NO--UR/0374/70/006/000/0068/0075

CIRC ACCESSION NO--AP0112874
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0112874
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE PROPAGATION OF STRESS
WAVES IN FREELY SUPPORTED POLYMER BARS USING PHOTOELASTICITY METHOD.
THE MECHANISM OF THE FORMATION OF STRESS WAVES AT PULSED LOADING IS
EXPLAINED. THE FEATURES OF THE DYNAMICAL STRESS STATE ARE ESTABLISHED.
THE EFFECT OF A NONELASTIC RESISTANCE OF THE MATERIAL IS ESTIMATED.
   FACILITY: VSESOIUZNYI NAUCHNO ISSLEDOVATEL'SKII INSTITUT
GIDROTEKHNIKI, LENINGRAD, USSR.

UNCLASSIFIED

A70-23174 #   Kinematographic study of rapidly occurring processes with the aid of polarized light (Kinematograficheskoe issledovanie bystroprotekaiushchikh protsessov s pomoshch'iu poliarizovannogo sveta). L. K. Malyshev and A. A. Panteleev (Vsesoiuznyi Nauchno-Issledovatel'skii Institut Gidrotekhniki, Leningrad, USSR). *Zhurnal Nauchnoi i Prikladnoi Fotografii i Kinematografii*, vol. 15, Jan.-Feb. 1970, p. 31-36. 14 refs. In Russian.

Brief survey of the polarization-optical method of studying mechanical stresses, noting the special features of the application of this method to studies of opaque models of natural material subjected to dynamic loading. Two experimental arrangements employing this method and using available standard equipment are described, which make it possible to record pulsed and periodic stressed states in transparent and opaque models. The results of experiments are presented in the form of kinograms and graphs. Special attention is paid to equipment used for decoding kinograms.
                                              A.B.K.
                                              ALS

USSR   UDC 778.534.83:535.5

MALYSHEV, L. K., and PANTELEYEV, A. A., All-Union Scientific Research
Institute of Hydraulic Engineering imeni B. YE. Vedeneyev

"Cinematographic Investigation of Fast Flowing Processes With the Help
of Polarized Light"

Translation: A polarization optical method of studying mechanical stresses
and the peculiarities of its application in the study of opaque models made
of natural material during dynamic loading are reviewed. Two experimental
apparatuses which utilize the method are described. They are assembled from
standard parts and make possible a recording of pulsed and periodic stress
states in transparent and opaque models. Results obtained in experiments are
presented in the form of cinemagrams and graphs. The technique of reading
cinemagrams is given special attention.

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USSR

UDC: 681.3:519.2

MALYSHEV, N. G., GORODETSKIY, B. V., TOTAYEV, L. T., Taganrog Radio Engineering Institute

"An Automatic Monitoring System"

Translation: This Author's Certificate introduces an automatic monitoring system containing a statistical analyzer, an associative memory, a controllable generator of random functions with arbitrary distribution law, a unit for storage of settings, a comparison unit, a control unit, a unit for storage of coefficients, a normal random number generator, a computer unit, and a display unit. As a distinguishing feature of the patent, the accuracy and reliability of the system are improved by connecting the output of the statistical analyzer to the first input of the associative memory, while the output of the controllable generator of random functions with arbitrary distribution law is connected to the second input of the associative memory. The input of this random function generator is con-

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USSR

MALYSHEV, N. G. et al., USSR Author's Certificate No 367474

nected to the first output of the control unit, and the second output of
the control unit is connected to the first input of the unit for storage
of coefficients. The fourth output of the control unit is connected to
the input of the normal random number generator, and the control unit input
is connected to the output of the associative memory. The output of the
associative memory is connected to the second input of the unit for storage
of settings, and the output of this unit is connected to the first input of
the comparison unit. The second input of the comparison unit is connected
to the output of the computer unit. Connected to the first input of the
computer unit is the output of the normal random number generator, while
the output of the unit for storage of coefficients is connected to the
second input of the computer unit. The output of the comparison unit is
connected to the input of the display unit.

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USSR

MALYSHEV, N. G.

"One Method of Transforming Probability Characteristics of Distributions"

Otbor i Peredacha Inform. Resp. Mezhved. Sb [Collection and Transmission of Information, Republic Interdepartmental Collection], No 29, 1971, pp 15-19, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V17 by the author).

Translation: The possibility is studied of converting random quantities, the distributions of which have exponential-type densities, to normally distributed random quantities.

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USSR   UDC: 519.21

MALYSHEV, N. G., GORELOVA, G. V.

"Analysis of the Functional Relationship Between Rayleigh and Normal Dis-
tribution Laws"

V sb. Regional'n. nauch.-tekhn. seminar po statist, analizu, modelir. i
avtomatiz. kontrolya ob"yektov s konsturktivno-slozhn. strukturoy (Regional
Scientific and Technical Seminar on Statistical Analysis, Modeling and
Automation of the Inspection of Objects of Complex Structural Design--
collection of works), vyp. 2, Taganrog, 1970, pp 81-93 (from RZh-Kibernetika,
No 11, Nov 71, Abstract No 11V37)

Translation: The authors analyze the formula

$$Y(x) = \sqrt{2} \, V \sqrt{-\ln[1 - \Phi(x)]},$$

where $\Phi(x)$ is a normal distribution function, and V is a constant. V.
Ivanov.

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USSR

UDC: 51

MALYSHEV, N. I.

"Some Problems in the Study of Topological Models of Data Processing Systems"

Tr. Mosk. ekon.-stat. in-ta (Works of the Moscow Institute of Economical Statistics), 1971, ch. 2, pp 51-58 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V416)

Translation: The problem of synthesizing the optimum structure of an automated data processing system is written out in the form of a problem of integral programming.

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USSR

UDC 612.858.4.015.3.014.45.014.6

ANICHIN, V. F., and MALYSHEV, N. M., Chair of Otorhinolaryngology, Leningrad
Sanitary Hygiene Medical Institute

"The Effects of Some Drugs on the Nature of Changes Occurring in the Spiral
Organ During Exposure to High Frequency Sounds"

Abstract: Experiments were conducted on guinea pigs to investigate the effects
of sodium amytal, nicotinic acid, and caffeine on the changes induced in the
cochlear receptors by a sound of 4,000 cyc/sec and 100 db, to which the animals
were exposed for 3 and 6 hrs. The evaluation was performed on the basis of
nucleic acid and glycogen metabolism and certain specific reactions of cell
nuclei. The results indicate that sodium amytal magnifies somewhat the trau-
matic action of the high frequency sound and nicotinic acids attenuates it,
while caffeine exerts no effect.

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USSR   UDC 621.371.029.55

BENEDIKTOV, Ye. A., GETMANTSEV, G. G., YEZHOV, A. I., KOROBKOV,
Yu. S., MALYSHEV, S. K., MATYUGIN, S. N., MITYAKOV, N. A.,
SAZONOV, Yu. A., CHERNOV, V. A., BEN'KOVA, N. P., BEREZIN, Yu. M.,
BUKIN, G. V., KOLOKOLOV, L. Ye., and PEREKHVATOV, Yu. K.

"Results of an Experiment in Shortwave Radio Propagation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.
Sekts. 3. (Tenth All-Union Conference on the Propagation of Radio
Waves; Report Theses; Section 3--collection of works) "Nauka," 1972
pp 73-76 (from RZh--Radiotekhnika, No 10, 1972, Abstract No
10A367)

Translation: Results of experiments on investigating the charac-
teristics of wave propagation in the decameter range (5.7-15.0 MHz)
are analyzed; the communications took place between the following
magnetically adjacent points: an ionospheric station in Gor'kiy and
two science research ships in the Indian Ocean. In particular, the
possibility of communication over the Peterson beam was estimated.
Two illustrations, bibliography of one. N. S.

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USSR

MALYSHEV, V. A.

"Analytic Method in the Theory of Two-Dimensional Positive Random Walks"

Sib. Mat. Zh. [Siberian Mathematics Journal], 1972, Vol 13, No 6, pp 1314-1329 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V102, by the author).

Translation: A random walk over a discrete grid in a plane quadrant satisfying certain requirements of homogeneity and limitedness of steps is studied. The functional equation for the generating functions of the stable probabilities are interpreted as a boundary problem for functions of two complex variables, and a method of solution is suggested. The possibility is studied of analytic continuation of the generating functions of the stationary probabilities, and it is explained that the singular points are either poles or branching points. An explicit representation is found for the generating functions of the boundary stable probabilities in the form of series and products generalizing the corresponding conceptions for elliptical ζ and σ functions. The full generating function is expressed rationally through the boundary generating

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functions. The Lere remainder theory is used to find an integral representation for the stable probabilities in the form of an integral of a one-dimensional cycle based on a Riemann surface.

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Probability & Statistics

MALYSHEV, V. A.

"Asymptotic Behavior of Stationary Probabilities for Two-Dimensional Positive Random Walks"

Abstract: The article, which is a direct continuation of a previous article by the author, considers random walks from the set $\mathcal{B}_1$ of a parameter space, it being everywhere assumed (unless otherwise stated) that the walk inside the quarter-plane is simple: i.e., $p_{11} = p_{1,-1} = p_{-1,1} = p_{-1,-1} = 0$. To find the asymptotic behavior of π_{mn} inside the quadrant, use is made of the representation of π_{mn} in the form of an integral with respect to a one-dimensional cycle on a basic Riemann surface S. The integrand is classical in character for use of the saddle point method. It is proved that this cycle can be deformed so that it passes through the saddle point, while in other respects it lies below the level of the saddle point. This is done by

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USSR

studying a real Riemann surface and the structural stability of the lines of the level of some Morse functions on S. If there is deformation of the cycle, however, poles of the integrand may be encountered. If not, the asymptotic behavior is determined by the contribution of the saddle point; otherwise, by the contribution of the poles. The fundamental theorem gives a qualitative description of the asymptotic behavior in a certain analogy with the language of turbulence theory.

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USSR

UDC 519.217

MALYSHEV, V. A.

"Analytic Method in the Theory of Two-Dimensional, Positive Random Walks"

Moscow, Sibirskiy Matematicheskiy Zhurnal, Vol 13, No 6, Nov-Dec 72, pp 1314-1329

Abstract: The article considers a random walk on a discrete lattice in the quarter-plane which satisfies certain requirements for homogeneity and boundedness of discontinuities. The functional equation for generating functions of stationary probabilities is treated as a boundary value problem for functions of two complex variables, and a method is suggested for its solution. The possibility of analytic continuation of the generating functions is studied, and the nature of singular points is examined, these proving to be either poles or branch points. An explicit representation is obtained for the generating functions of boundary stationary probabilities in a form which generalizes the Mittag-Leffler representation for elliptic zeta-functions, and the Weierstrass representation for elliptic sigma-functions (in the form of a series and product respectively). Leray's residue theory is used to obtain a representation for stationary probabilities 1/2

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MALYSHEV, V. A., Sibirskiy Matematicheskiy Zhurnal, Vol 13, No 6, Nov-Dec 72, pp 1314-1329

in the form of an integral over a one-dimensional cycle on the corresponding Riemann surface. This representation will be used in the second part of this work to find the asymptotic form for stationary probabilities.

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UDC: 621.373.029.7.001.5

USSR

MALYSHEV, V. A. and BULATOV, R. I.

"Analyzing Nonlinear Characteristics of Four-Level Quantum Systems With Double Pumping"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1612-1617

Abstract: This paper deals with the problem of investigating the nonlinear characteristics of quantum systems with double pumping and compares them with the analogous characteristics of systems with single pumping. The problem is examined in connection with four-level quantum systems, with consideration of the fact that double pumping may be realized by the same quanta or by the quanta of two different energy levels corresponding to the levels of the $1 \rightleftarrows 3$ and $2 \rightleftarrows 4$ transitions. The difference in populations at the levels of the different transitions is computed, and the double-pumping characteristics are analyzed on the basis of expressions describing the nonlinear characteristics for the $1 \rightleftarrows 3$ transition. It is found that the already known results of investigating non-linear operation in single-pumping systems can be extended to the double-pumping systems, and that the presence of second pumping with the $2 \rightleftarrows 4$ transition always leads to an increase in the upper limit of the dynamic range for quantum amplifiers.
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USSR   UDC 911.3:61:001.8(4/9)

FILATOV, V. G., GURBO, G. D., MALYSHEV, V. A., and LEVOSHIN, O. A.

"Research Materials on the Landscape Epidemiology of Several Neighboring
Regions in the Urals and Western Siberia"

V sb. Materialy XV Vses. s'ezda epidemiologov, mikrobiologov i infektsionistov,
Tezisy Dokl. Ch. 1 (Proceedings of the 15th All Union Congress of Epidemiolo-
gists, Microbiologists and Infectious Disease Specialists, Theses Reports,
Part 1 -- collection of Works), Moscow, 1970, pp 100-102 (from RZh-Meditsin-
skaya Geografiya, No 2, Feb 71, Abstract No 2.36.53)

Translation: Natural foci of zooanthroponoses in the Chelyabinsk, Tyumensk,
and partially in Sverdlovsk regions are discussed. Tickborne encephalitis,
Omsk hemorrhagic fever, rabies, North Asian tickborne scrub typhus Q-fever,
tularemia, leptospirosis, toxoplasmosis, and helminthosis are included. The
problem of a detailed regional, epidemiological classification of the terri-
tory under consideration is discussed.

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USSR

MALYSHEV V. A. (Moscow)

"The Wiener - Hopf Equations in a Quarter Plane, Discrete Groups, and Automorphic Functions"

Abstract: The article deals with operators $A(l_1(Z_2^{++}) \to l_1(Z_2^{++}))$ of type $(A)(x) =$

$$= \sum_{k \in Z_2^{++}} a(x-k) \xi(k),$$ where $a \in l_1(Z_2); Z_2(Z_2^{++})$ — is the set of the points of the plane with integral (non-negative) coordinates. The basic results of the article are: the reversibility of operator A and an analysis of the analytic properties of the symbol F_A of the solution of equation $A\xi = \eta$.

4 figures. 16 bibliographic entries.

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USSR

MALYSHEV, V. A.

"Positive Random Walks and Galois Theory"

Moscow, Uspekhi Matematicheskikh Nauk, Vol 26, No 1 (157), Jan-Feb 71, pp
227-228

Abstract: The purpose of this article is to show an unexpected relationship
between probability theory and Galois theory.

Lemma 1. If the random walk is nondegenerate, then the polynomial $Q(x,y)$
is non-reducible in the ring $C[x,y]$.

Four theorems are given and proven in this article:

Theorem 1. Let χ be a fourth-order group if and only if either (1) the
random walk is simple-- that is, $p_{11} = p_{1,-1} = p_{-1,1} = p_{-1,-1} = 0$ or (2) the
walk inside the quadrant is composed of independent walks along two axes with
an accuracy up to p_{00}: that is,

$$\Sigma_{p_{ij}} x^i y^j = p(x)\tilde{p}(y) + \tilde{p}_{00}.$$

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USSR

Theorem 2. Let the group χ be finite and $f \cdot f_\delta \cdot f_{\delta 2} \cdots \cdot f_{\delta n-1} \neq 1$, where $2n$ is the order of the group χ and $f = qq_\eta/qq_\eta$. Then the rational solutions to equation (1) which satisfy the conditions $\pi \quad C(x)$, $\pi \quad C(y)$ exist, are unique, and are determined from formulas (1) and (2), and

$$\pi = \frac{\psi_{n-1} + \psi_{\delta n-2}f_{\delta n-1} + \cdots + \psi f_{\delta n-1}f_{\delta n-2} \cdots \cdot f_\delta}{1 - f \cdot f_\delta \cdot \ldots \cdot f_{\delta n-1}}, \text{ where}$$

$$\psi = \frac{q_0 \tilde{q}_{\eta}}{q_\eta \tilde{q}} - \frac{q_{0\eta}}{q_\eta} . \tag{3}$$

Theorem 3. For a nondegenerate random walk with a fourth-order group, let

$$f \cdot f_\delta = 1. \tag{4}$$

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MALYSHEV, V. A., Uspeki Matematicheskikh Nauk, Vol 26, No 1 (157), Jan-Feb 71, pp 227-228

Then the generating function of the stationary probabilities is rational if and only if

$$\psi_\delta + \psi f_\delta = 1. \tag{5}$$

Theorem 4. For nondegenerate random walks the generating function of the stationary probabilities may be rational only on a certain closed, everywhere-dense set of space of the parameters p_{ij}, p'_{ij}, p''_{ij}, p^0_{ij}.

This article cites 2 literature references.

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ELECTRONICS

Amplifiers

MALYSHEV, V. A.

"Computing the Frequency Characteristics of Transfer Regenerative Dual-Resonator Microwave Amplifiers"

Abstract: The coupling of two resonators through a transmission line of arbitrary length is the most general case of cascaded regenerative resonator amplifier, is of practical importance, and has not been previously investigated. This paper offers a theory for this type of arrangement, beginning with its equivalent circuit and the assumption that the tuned circuits are connected by input, output, and intermediate transmission lines through ideal transformers. The author limits himself to considering the most often encountered case in which the susceptance in each resonator is quite small, and obtains an expression for the power transfer factor through the circuit in terms of a parameter corresponding

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USSR

MALYSHEV, V. A., Izvestiya VUZ--Radioelektronika, Vol 13, No 11, 1970,
pp 1367-1371

to a mutual coupling factor, and the signal frequency. It is asserted that
the theory developed is valid for a whole group of narrow-band regenerative
amplifiers working in the microwave range.

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- 1 -

by the first-named author above on a resonance system of two arbi-
trary nonuniform devices at some distance from each other in a
transfer strip. The present paper substitutes two tunnel diodes
for the nonuniform devices. Using formulas found in the earlier
articles, the authors obtain an expression for the power gain at
resonance and find that it has a maximum at a particular value of
the frequency. A second expression gives them the distance be-
tween the diodes corresponding to the average frequency of the sys-
tem when operating on the negative portions of their volt-ampere
characteristics. The curves for the amplifier frequency charac-
teristics for various bias voltages on the diode are plotted. The
authors assert that their computations are sufficiently accurate
for low input signal levels, and for geometrical dimensions of the
tunnel diodes much smaller than the wavelength of the strip signal,
when the diodes can be considered point nonhomogeneities.

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MALYSHEV, V. A. and MOSKALENKO, Ye. P.

"Investigation of a Conducting Resonance UHF Amplifier With Two Tunnel Diodes in the Transfer Strip"

Abstract: This article is an extension of an earlier paper written by the first-named author above on a resonance system of two arbi-

USSR   UDC   621.376.234

GORBIN, V. V., MALYSHEV, V. A.

"An Asynchronous SHF Detector Based on a Tunnel Diode"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices and Their
Application--collection of works), Vyp. 23, Moscow, "Sov. radio", 1970, pp 285-296
(from RZh-Radiotekhnika , No 10, Oct 70, Abstract No 10D31)

Translation: With the equivalent circuit of the detector as a basis, an expression
is derived for the amplification factor. The frequency properties are discussed.
Bibliography of five titles. Authors' abstract.

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1/2   041   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--THEORY OF A LASER WITH AN INSTANTANEOUSLY INCREASING Q -U-

AUTHOR--MALYSHEV, V.A.

COUNTRY OF INFO--USSR

SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, JAN. 1970, P 147-154

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NONLINEAR DIFFERENTIAL EQUATION, LASER THEORY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1979/1584   STEP NO--UR/0109/70/015/000/0147/0154

CIRC ACCESSION NO--AP0047907
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0047907

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMULATION AND SOLUTION OF A
NONLINEAR DIFFERENTIAL EQUATION DESCRIBING THE KINETICS OF A LASER WITH
AN INSTANTANEOUSLY INCREASING Q WITHIN THE FRAMEWORK OF SLOWLY VARYING
AMPLITUDES. THE SOLUTION TO THIS EQUATION IS OBTAINED WITHOUT TAKING
INTO ACCOUNT THE EFFECTS OF PUMPING AND RELAXATION DURING A PULSE. ON
THE BASIS OF AN ANALYSIS OF THE SIMPLE SOLUTION OBTAINED, A QUANTITATIVE
ESTIMATE IS MADE OF THE MAIN LASER PARAMETERS, AND METHODS OF ADJUSTING
THE SYSTEM TO OBTAIN OPTIMAL OPERATING CONDITIONS ARE OUTLINED.

UNCLASSIFIED

USSR M

MALYSHEV, V. A., ALEKSEYEV, YU. I.

"Investigating the Current Form in a Gunn Diode Kinematic Model"

Abstract: The authors undertake a theoretical investigation of the Gunn effect, the negative differential conductivity in semiconductors, through consideration of the interaction between drifting charged particles and the variable ultra-high frequency field. Assuming that a variable voltage of very small amplitude is applied to the semiconductor in addition to the constant voltage normally given it, the authors obtain an equation for the field voltage and consequently for the drift velocity on the assumption that the latter is solely a function of the field voltage. The expression for the drift velocity is then expanded in a Taylor series, the first three terms of which are kept. By this procedure, expressions are found for the form of the current in the semiconductor. The results obtained by this method were compared with earlier published results and found to be in good agreement with them. For their method, the authors claim greater simplicity and better ability at representing the mechanism of current pulse variations in the semiconductor.
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USSR   UDC 621.382.233

MALYSHEV, V. A., BULATOV, R. I., and LAVRUK, I. T., Taganrog Radio Engineer-
ing Institute

"Effect of Low Magnetic Field on Drift Motion of Charged Particles"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 5, 1972, pp 69-72

Abstract: An earlier article by V. A. MALYSHEV obtained a differential equa-
tion of averaged drift motion and considered various particular cases of its
solution. The present article gives a generalization of results obtained in
the earlier article for the case in which there is a low, constant magnetic field
with induction B situated at an arbitrary angle θ to the direction of
electric field E, along which the drift motion is studied. The smallness cri-
terion of field B is determined by mathematical simplifications which are
made and reduces to smallness of cyclotron frequency as compared with colli-
sion frequency.

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USSR   UDC 621.375.82

BABENKO, V. A., ZEL'DOVICH, B. YA., MALYSHEV, V. I., and SYCHEV, A. A.

"Radiation Spectrum of Giant Laser Pulse With Allowance for Self-Frequency Modulation"

Translation: The article deals with a theoretical consideration of the broadening of the spectrum of a giant laser pulse due to the dependence of the refractive index of the matrix of the active medium on the light intensity. A calculation is performed for the integral effect for the entire giant pulse, assuming that the initial radiation is a Gaussian random process. Experiments are performed, the results of which agree with the theoretical estimates. Bibliography with eight titles.

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USSR

UDC: 621.375.82

IONIN, A. A., MALYSHEV, V. I., and MASALOV; A. V.

"Increasing the Degree of Self-Synchronization of the Modes in a Neodymium Glass Laser"

Translation: An investigation is made into the characteristics of the radiation of two coupled neodymium glass lasers with a passive gate. The radiation in one laser is developed from the partially synchronized radiation of the other. A schematic of the equipment is given. The necessary conditions for effective self-synchronization of the modes (SM) in the controlled laser are indicated. By choosing the amount of coupling, the authors succeeded in obtaining an increase in the degree of SM (the percentage modulation of the controlled laser's radiated pulse increased to 100% and the radiation spectrum was markedly broadened). The experimental results agree closely with values for the oscillation development time. Bibliography of 10. I. O. S.

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USSR

UDC 620.179.16

VORONOV, A. I., KOZLOV, Yu. V., MALYSHEV, V. I., and MOROZOV, V. M., Tomsk
Polytechnical Institute imeni S. M. Kirov

"Attachment to a UKB-1 Defectoscope for Inspection of Concrete at Negative
Temperatures"

Abstract: A shock-excited thyristor with increased output voltage amplitude
(up to 6 kv) is proposed as an attachment for a UKB-1 defectoscope for use in
the non-destructive testing of concrete at negative temperatures. Since it
is not possible to use ultrasonic instruments equipped with Seignette salt
heads in unheated locations, the authors employed ceramic piezoelements such
as TsTS-19 which require a higher voltage and produce a higher voltage. The
modified defectoscope with TsTS-19 radiation elements was tested on a standard
concrete sample at -20 C. The tests showed reliability in the +60 to -20 C
interval. 3 figures, 1 table, 1 bibliographical reference.

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USSR

UDC 669.71.053.24(088.8)

KHITRIK, S. I., GASIK, M. I., VUKOLOV, YE. A., KLIMKOVICH, N. A.,
PORADA, A. N., LAGUNOV, YU. V., POLONSKIY, S. M., IORDANOVA,
Z. A., MALYSHEV, V. I., YEMLIN, B. I., KASHKUL', V. V., MASHKOV,
V. P. TSEYMAKH, N. L., YEM, A. P., CHERNYSH, F. I., and KOLNOGU-
ZENKO, V. A., Dnepropetrovsk Metallurgical Institute

"Method of Smelting Abrasive Electrolytically Produced Corundum"

Translation: A method is proposed for smelting abrasive elec-
trolytically produced corundum in a thermal furnace which involves
deep fusion of alumina-containing charge with reducing agents.
To increase the abrasive properties of corundum and to obtain
in it a Ti oxide content of $< 1\%$, smelting is carried out on
kaolin presintered with Fe-ore additive or scale in the amount
of 20-30 wt % of the charge.

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TITLE--STRUCTURE OF SOLID LASER SPECTRA UNDER FREE GENERATION CONDITIONS
-U-

AUTHOR-(03)-MALYSHEV, V.L., MASALOV, A.V., SYCHEV, A.A.

COUNTRY OF INFO--USSR

SOURCE--PSI'MA ZH, EKSP. TEOR. FIZ. 1970, 11(7), 324-8

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RUBY LASER, NEODYMIUM LASER, TRAVELING WAVE, RADIATION
SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/2001   STEP NO--UR/0386/70/011/007/0324/0328

CIRC ACCESSION NO--AP0120644
UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120644

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RADIATION SPECTRA OF THE RUBY AND
ND-GLASS LASERS, WORKING UNDER TRAVELING WAVE CONDITIONS, WERE
INVESTIGATED. AN ELIMINATION OF BOTH THE SELECTION AND SPACE
INHOMOGENEITY OF THE RADIATION FIELD DID NOT REMOVE THE IRREGULAR
STRUCTURE OF THE FREE GENERATION SPECTRA. THIS STRUCTURE IS AN INTEGRAL
PROPERTY OF SOLID LASERS DURING AN EXCITATION OF A GREAT NO. OF AXIAL
MODES AND CONFIRMS THE FLUCTUATING CHARACTER OF THE RADIATION FIELD.
THE IRREGULAR STRUCTURE OF THE SPECTRA WAS OBSD. EVEN IN BOTH LASERS
WITH PASSIVE SHUTTERS; UNDER CERTAIN CONDITIONS, ALSO THE SMOOTH SPECTRA
(WITH AN ACCURACY TO THE INTERMODE DISTANCE), ATTRIBUTED TO THE PRESENCE
OF ONLY 1 PULSE ON THE AXIAL PERIOD (I.E. TO A COMPLETE SELF
SYNCHRONIZATION OF THE MODES), WERE OBSD.   FACILITY: FIZ. INST.
IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

AKOYEV, I. G., MAKSIMOV, G. K., and MALYSHEV, V. M.

Moscow, Luchevoye Porasheniye Mlekopitayushchikh i Statisticheskoye Model-
irovaniye (Radiation Sickness in Mammals and Statistical Modeling), Atomizdat,
1972, 99 pp

Translation:

Contents

Introduction 3

1/2

USSR

AKOYEV, I. G., et al., Luchevoye Porazheniye Mlekopitayushchikh i Statistich-
eskoye Modelirovaniye, Atomizdat, 1974 99 pp

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USSR   UDC   621.396.267:629.123.053

FRIDMAN, V. Ts., MALYSHEV, Y. M., BLINOV, V. V.

"The 'Kivach-1' and 'Kivach-2' Marine Navigational Radar Systems"

Sudovyye navigatsionnyye radiolokatsionnyye stantsii "Kivach-1" i
"Kivach-2" (cf. English above.), Moscow, "Fishch. prom-st'", 1971,
168 pp, ill. 75 k. (from RZh-Radiotekhnika, No 7, Jul 71, Abstract
No 7G20 K)

Translation: The book contains information on the principles of design,
on the operational and technical characteristics, construction and work-
ing principles of the "Kivach-1" and "Kivach-2" radar installations.
The wiring connections, and the functional circuit of the radar install-
lations are described together with schematic diagrams and the construc-
tion of the instruments. Rules are given for regulating and adjusting
the radar installations on board the ship, day-to-day operation, tech-
nical servicing, and replacement of the units and modules of the in-
stallations. The distinctive features of the image on the screen are
discussed, and recommendations are given on controlling and monitoring
the operating condition of the station. Forty-seven illustrations,
twenty-five tables, bibliography of thirteen titles. Annotation.
1/1

USSR

MALYSHEV, V. N., NAZAROV, A. A.

"Thermodynamic Evaluation of the Effect of Titanium and Niobium on Suppress-
ing the Inclination of Chromium-Nickel Steels toward Intercrystalline Cor-
rosion"

Translation: A study of the conditions of eliminating the tendency toward
intercrystalline corrosion of Cr-Ni steel types Kh18N10 and Kh20N25 with
stabilization of them by Ti or Nb was made from the thermodynamic point of
view. It was proposed that intercrystalline corrosion is caused by preci-
pitation of the chromium carbides $Cr_{23}C_6$. The amounts of Ti and Nb, respec-
tively, required to suppress the tendency of these steels toward intercrystal-
line corrosion was determined on the basis of the calculated activity co-
efficients of Ti in Kh18N10 steel and Nb in Kh20N25 steel, considering the
initial heat treatment temperature. The article contains 1 illustration, 2
tables, and a 17-entry bibliography.

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USSR

UDC 629.76/.78.015:533.6

LEBEDEV, A. A., BARANOV, V. N., KRASIL'SHCHIKOV, M. N., MALYSHEV, V. V.

"Optimal Control Upon Entry Into the Atmosphere"

V sb. Upravleniye v kosmose. T. 1 (Control in Space. Vol 1 -- Collection of Works), Moscow, "Nauka", 1972, pp 256-266 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B346)

Translation: The problem of the synthesis of an autonomous control system for a space device entering the earth's atmosphere with a velocity close to the first cosmic velocity is discussed. 10 ref. Authors' abstract.

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1/2,   031   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MODELING OF NUCLEAR REACTIONS OF COSMIC RAY INTERACTION WITH THE
   MATERIAL OF STONY METEORITES -U-
AUTHOR-(05)-LAVRUKHINA, A.K., REVINA, L.D., MALYSHEV, V.V., YUKINA, L.V.,
   SATAROVA, L.M.
COUNTRY OF INFO--USSR

SOURCE--GEOKHIMIYA 1970, (5), 531-9

DATE PUBLISHED-------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, ATMOSPHERIC SCIENCES,
   ASTRONOMY, ASTROPHYSICS, PHYSICS
TOPIC TAGS--METEORITE, COSMIC RAY, NUCLEAR REACTION, ISOTOPE, BERYLLIUM
   ISOTOPE, IRON ISOTOPE, OXYGEN ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0911   STEP NO--UR/0007/70/000/005/0531/0539

CIRC ACCESSION NO--AP0136343
-------------------------------UNCLASSIFIED-------

CIRC ACCESSION NO--AP0136343
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. A POSSIBLE USE OF THE SEMI
   EMPIRICAL EQUATIONS OF RUDSTAM (1966) AND V. SCHWARTZ-H. OESCHGER (1967)
   FOR CALCG. THE CROSS SECTION OF ISOTOPE FORMATION IN TARGETS OF
   COMPLICATED CHEM. COMPN., IRRADIATED BY PROTONS WITH E EQUALS 660 MEV
   AND 19.2 GEV, WAS INVESTIGATED. THE CROSS SECTIONS FOR REACTION OF THE
   PRIME7 BE FORMATION FROM THE PRIME16 O NUCLEI AND BY PRIME56 FE(P, PN)
   PRIME55 FE REACTIONS WERE EVALUATED. THE MATERIAL OF THE ZAISAN LAKE
   AND KUNZSHAK STONY METEORITES WAS IRRADIATED BY PROTONS WITH ENERGIES OF
   660 MEV AND 19.2 GEV, RESP. THE DIFFERENT FRACTION OF ELEMENTS WERE
   ISOLATED RADIOCHEM. THE MEASURED RADIOACTIVITIES WERE COMPARED WITH
   CALCD. VALUES.   SATISFACTORY AGREEMENTS WERE OBSD. FOR MOST ISOTOPES.
   IN GENERAL THE AGREEMENT WAS BETTER AT E EQUALS 660 MEV THAN AT 3 EQUALS
   19.2 GEV. THIS WAS POSSIBLE CAUSED BY AN APPEARANCE OF THE MECHANISM OF
   NUCLEI SPALLATION IN THE E IS CONGRUENT TO 10 GEV REGION WHICH WAS QUAL.
   DIFFERENT THAN THE CASCADE MECHANISM. THE DATA OBTAINED CAN BE USED FOR
   MODELING OF THE DISTRIBUTION OF RATES OF RATES OF COSMOGENIC ISOTOPE
   FORMATION IN COSMIC BODIES WHICH IS NECESSARY FOR QUAL. INVESTIGATIONS
   OF THE EFFECT OF COSMIC RAYS ON THE STONY METEORITES, SURFACE LAYERS OF
   THE MOON, AND ASTEROIDS.   FACILITY: V. I. VERNADSKII INST.
   GEOCHEM. ANAL. CHEM., MOSCOW, USSR.

UNCLASSIFIED

1/2   018   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--OPTIMAL CONTROL AT ENTERING THE ATMOSPHERE -U-

AUTHOR-(04)-LEBEDEV, A.A., BARANOV, V.N., KRASILSHIKOW, M.N., MALYSHEV,
V.V.
COUNTRY OF INFO--USSR, FRANCE

SOURCE--INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL, SYMPOSIUM ON
AUTOMATIC CONTROL, 3RD, TOULOUSE, FRANCE, MAR. 2-6, 1970, PAPER. 18P.
DATE PUBLISHED--------70

SUBJECT AREAS--SPACE TECHNOLOGY, NAVIGATION

TOPIC TAGS--SPACECRAFT REENTRY CONTROL, SPACECRAFT LANDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0001   STEP NO--FR/0000/70/000/000/0001/0018

CIRC ACCESSION NO--AT0117301
                         UNCLASSIFIED

CIRC ACCESSION NO--AT0117301
ABSTRACT/EXTRACT--(U) GP-O-   ABSTRACT. EXAMINATION OF THE PROBLEM OF THE
  SYNTHESIS OF THE SELF CONTAINED CONTROL SYSTEM OF A SPACECRAFT ENTERING
  THE ATMOSPHERE WITH THE FIRST COSMIC SPEED. DIGITAL CALCULATIONS MADE
  BY MEANS OF AN ELECTRONIC COMPUTER SHOW THAT THIS SELF CONTAINED CONTROL
  SYSTEM MAKES IT POSSIBLE TO DECREASE THE DISPERSION COMPONENT OF LANDING
  SPOTS SIGNIFICANTLY. A HISTOGRAM OF THE LANDING SPOTS IN THE CASE OF
  CONTROLLABLE AND CONTROLLESS MOTION IS SHOWN.   FACILITY:
  MOSKOVSKII AVIATSIONNYI INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

LAVRUKHINA, A. K.; USTINOVA, G. K.; MALYSHEV, V. V.; SATAROVA, L. M.

"Modelling Nuclear Reactions in Isotropically Irradiated, Thick Targets"

Moscow, Atomnaya Energiya; January, 1973; pp 23-8

ABSTRACT: While revolving about two mutually perpendicular axes, an iron sphere, having a radius of 10 cm, is irradiated by a 660-Mev proton beam. As a result of such rotation, the surface of the sphere is irradiated isotropically. The activity of Na^{24} in thin aluminum plates and Mn^{52}, V^{48}, Sc^{44m}, Sc^{47}, and Ca^{47} in iron plates placed at various depths along the diameter of the sphere was measured. The experimental results are compared with calculated curves obtained by an analytical method used for the analysis of activity in meteorites and lunar rocks. It was shown that at a depth of ~ 2 cm below the surface the activity calculated by the analytical method agrees quantitatively with the experimental results.

The laws governing the distributions of cosmogenic isotopes in iron meteorites of various sizes are analyzed. A comparison with calculations by the Monte Carlo method is presented.

The article includes six figures. There are 40 bibliographic references.

USSR

MALYSHEV, V. V., Institute of Atomic Energy Imeni I. V. Kurchatov

"Membrane Zero-Indicators for Determination of Pressure in Aggressive Media and Diagrams with Automatic Regulation of Antipressure"

Abstract: Construction of membrane zero-indicators of pressure (media separators) are described with appropriate diagram drawings. Also automatic systems for monitoring determination of pressures are discussed. These systems may find utilization in accurate determination of the pressure in aggressive media in temperature range of up to +400°C and pressures up to 500 atm.

1/1

MALYSHEV, V.V.

Zhdanov, V. A., and V. F. Konusov.
On the theory of air equation of state
for solids. In: Itogi issledovaniy po fizike.
1917-1967. Tomsk, Tomskiy universitet,
1971, 87-102. (RZhKh, 10/72, no. 10B577)

Consideration is given to the general properties of
equations of state derived in terms of quasi-harmonic approximations of
crystal lattices under the effect of mechanical stresses of an arbitrary type.
The influence of lattice symmetry on the form of the equations of state is
clarified, as well as that of the binding forces. A study is made of the
critical states of crystal lattices prior to mechanical failure. Results of
research on a series of specific crystals are discussed.

Malyshev, V. V. Equation of state for uranium
hexafluoride over a wide range of state parameters.
Atomnaya energiya, v. 32, no. 4, 1972, 313.

Experimental data on saturated vapor pressure P_s,
densities ρ_v and ρ_l of UF_6 vapor and liquid at equilibrium
are approximated by the equations

$$\lg P_s(\text{atm}) = 10.593 - \frac{2514.67}{T} - 0.01853T + \qquad (1)$$
$$+ 1.3917 \cdot 10^{-5} T^2 ;$$

$$\frac{\rho_v}{\rho_c}(x+0) = 1.500 - 0.7550 \theta - 0.20310 \theta + 0.000008 \theta^2 ; \qquad (2)$$

$$\frac{\rho_l}{\rho_c}(x+0) = 1.500 + 0.00100 + 0.210104 + 0.0981304 + \qquad (3)$$
$$+ 0.018170 \theta - 0.20102204 ,$$

where

$$\theta = (504.5 - T)^{1/4} . \qquad (4)$$

USSR

LAVRUKHINA, A. K., USTINOVA, G. K., MALYSHEV, V. V., and SATAROVA, L. M.

"Modelling Nuclear Reactions in an Isotropically Irradiated Thick Target"

Abstract: An analytical method, previously developed by the authors, for calculating the intensity of cosmic radiation and the activity of cosmogenic isotopes at any point of an isotropically irradiated cosmic body of any size and any composition was used to simulate nuclear reactions in an isotropically irradiated thick target. In compliance with optimum dimensions for the development of nuclear cascade in iron, an iron sphere of 10 cm radius served as target. The sphere, rotating in two perpendicular planes, was irradiated by a 660-Mev proton beam. As a result of rotation, the surface of the sphere is irradiated isotropically. The activity of Mn^{24} in thin aluminum plates and the activities of Mn^{52}, V^{48}, Sc^{44m}, Sc^{47}, and Ca^{47} in iron plates placed at various depths along the diameter of the sphere were measured. The experimental results are compared with curves calculated by the analytical method. It is shown that at a depth of $\sim$2 cm, the calculated activities are in quantitative agreement with experimental data. The depth distributions of cosmogenic isotopes in iron meteorites of various sizes are analyzed. A comparison with calculations by the Monte Carlo method is presented. Six figures, forty bibliographic references.

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Computation

USSR   UDC 541.124/126

PANCHENKOV, G. M., MALYCHEV, V. V., MAKARENKOV, V. V., GRIGOR'YEV, V. A., and
PUSTYREV, O. G.

"Flash Point Concentration Limits of Hydrocarbons and Hydrocarbon Fuels"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 2, Feb 72, pp 374-376

Abstract: Concentration range of a cold flame flash point of various hydro-
carbons and hydrocarbon fuels determined in containers made of different
materials, changing the temperature and the degree of dilution with an inert
gas are described well by a general equation.

$$\bar{P} = f(\bar{C})(C_0 - 1)/\bar{C}(\bar{C}_p - \bar{C})$$

where $\bar{C}_0 = 1/C_0$ and $f(\bar{C})$ is an experimentally determined function.

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